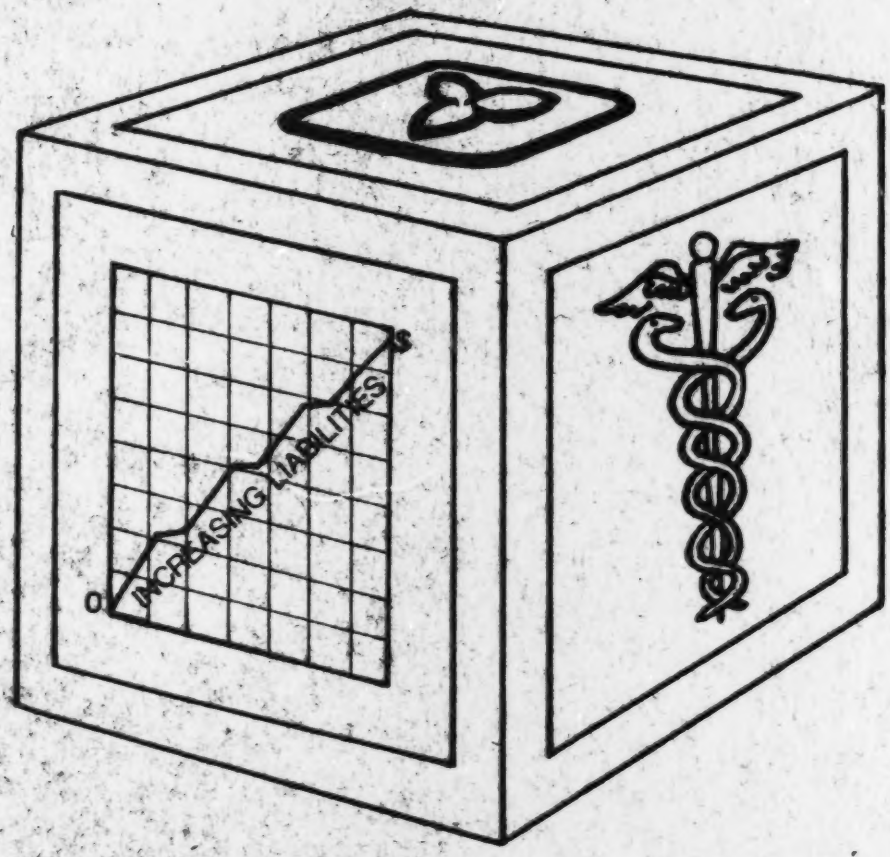
Ontario

A Management Advisory Publication

# Sick Leave Credit Plans Under The Municipal Act




## A Guide for Municipalities in Ontario

June 1983

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Deputy Minister

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sous-ministre

Ministry of
Municipal Affairs
and Housing

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Affaires municipales
et du Logement

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June 1983

I have pleasure in sending you the latest Municipal Advisory Publication issued by the Ministry, "Sick Leave Credit Plans Under the Municipal Act".

This publication is in response to requests from a number of municipal treasurers who expressed concern over the possible effect that the increasing liabilities associated with such plans could have on the future financial resources of their municipalities.

The publication sets out the scope of such plans, their advantages and disadvantages and touches on the alternatives of moving to a plan of short-term and long-term disability protection or of adopting a policy of partial funding through a reserve fund.

The Ministry had at one time given consideration to requiring a mandatory funding of a percentage of sick leave liability. However, there is sufficient evidence that as municipalities recognize the possible impact on their future revenues they are taking corrective action. As a result this publication does not recommend changes to legislation which would require mandatory reserve funds.

This subject is of interest both to elected officials and to appointed administrators. Therefore, I am sending two copies of "Sick Leave Credit Plans Under the Municipal Act" to every municipality in Ontario. One complimentary copy is for the Head of Council and the other is for the Treasurer or Clerk-Treasurer. Anyone may obtain a copy from the Ontario Government Bookstore, 880 Bay Street, Toronto, Ontario, M7A 1N8, at a cost of $3.00.

We welcome response and comment on this publication from anyone interested.

Yours sincerely,

Ward Cornell
Deputy Minister

Attachment

# Sick Leave Credit Plans Under The Municipal Act

## A Guide for Municipalities in Ontario

Ontario

Ministry of
Municipal Affairs
and Housing

Honourable
Claude F. Bennett
Minister

Ward Cornell
Deputy Minister

June 1983

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Extract of a Report presented to the Ministry of Municipal Affairs and Housing of Ontario by William A. Mercer Ltd.

# Sick Leave Credit Plans

# Under The Municipal Act

## Introduction

The purpose of this monograph is to provide some insight and guidance into the operation of a sick leave benefit plan established under the authority of Section 208(47) of the Municipal Act. The monograph includes a brief description of the purpose of such a plan, some of the major concerns raised over such plans and some of the options available to meet those concerns. Appended to the monograph is a condensation of a report prepared by Wm. Mercer Ltd., a firm of actuaries, which shows the effect on three Ontario municipalities of continuing their pay-as-you-go policy compared to a partial funding policy.

## A Typical Sick Leave Credit Plan

Sick leave credit plans are intended to provide employees with a form of salary protection in the event of sickness or non-job related accidents. Under a typical plan each employee is entitled to a certain number of days per year (commonly 12 to 18 days) during which he or she will be paid at the regular rate of salary if prevented from working due to ill health. If the employee does not use the yearly allowance of sick days, the balance of unused days is left to accumulate for future use. This accumulation will then be available if and when the employee is incapacitated for a period of time exceeding the yearly allowance of sick leave days.

Should the employee have a balance of unused sick leave days at the time of termination and provided the employee has reached a vested status, he or she will be entitled to receive a service gratuity benefit. Vested status is achieved when an employee has accumulated the total number of years of employment stipulated in the sick leave by-law with the result that the sick days standing to his or her credit cannot be legally revoked.

The amount of the termination benefit is limited, under the Municipal Act, to a maximum of 50 per cent of the accumulated sick leave days multiplied by the employee's daily rate of pay at the time of termination. In any event, the amount of benefit cannot exceed half a year's salary. Under private legislation, one municipality is allowed to accumulate sick days in excess of that permitted under the Municipal Act.

When an employee changes jobs within the local government sector, the accumulated sick leave days are transferable from the originating municipality or local board to any other municipality or local board which has established a sick leave credit plan under the Municipal Act, or any other general or special Act.

A review of the characteristics of a sick leave credit plan established under the Municipal Act shows that such a plan will:

(a) provide employees, who have accumulated credits, with limited protection against the loss of income due to illness or non-job related accidents;

(b) eliminate the need for the employees, municipality or local board to pay premiums or other costs commonly associated

with plans covered by private insurance carriers. (It should be noted however, that insured plans usually provide better coverage than a sick leave credit plan of the type provided for by the Municipal Act).

However, the plan will not provide financial protection to an employee who suffers a long-term illness or injury extending beyond the total accumulated sick days held; this situation occurs when a new employee with a short service period is the victim of a serious illness or injury. Nor will the plan give long-term financial protection to an employee who suffers a permanent disability not job-related, and is unable to work again.

In addition to its limitation in respect of financial protection to the employee, the vesting of sick leave credits changes the nature of the plan from a needs-oriented program of salary protection to one that provides a paid leave entitlement. In effect it is often regarded as additional paid vacation or as a cash settlement to be received at the time of retirement.

**The Funding of Sick Leave Credit Plans**

Concerns have been raised by the municipal sector regarding the funding of sick leave credit plans. The future liabilities built into these plans have become increasingly significant in many municipalities and continue to grow at a rate equal to or exceeding the rate of inflation. While a number of municipalities have established a reserve or reserve fund to offset part of the impact of future sick leave payments the majority of municipalities have done little or nothing, consequently the amount of unfunded liability has increased substantially over the years. The

following chart illustrates both the growth in vested liability and the offsetting reserves or reserve funds for Ontario.

**Growth of Vested Sick Leave Gratuities and Related Funding**

| Year | Total Vested Liability | Reserve or Reserve Fund Provisions | Provisions As a Percentage of Total Vested Liability |
|---|---|---|---|
| | $ mill | $ mill | % |
| 1970 | 40.5 | 2.9 | 7.1 |
| * 1977 | 184.5 | 25.8 | 14.0 |
| * 1979 | 224.5 | 37.9 | 16.6 |
| * 1980 | 262.1 | 51.1 | 19.5 |
| * 1981 | 302.5 | 58.9 | 19.5 |

The 1970 figures are for only 126 of the largest municipalities in the province including Metro Toronto, the City of Toronto and all boroughs.

Source:

* Financial Information Returns (all municipalities)

While the above chart indicates that the percentage of funded liability has increased from 7 per cent in 1970 to 19.5 per cent in 1981, it should be noted that the increase is mainly due to a number of small municipalities having fully funded their plans.

Many of the problems facing municipalities with respect to unfunded sick leave gratuities can be directly traced to the way such costs are accounted for in the municipal sector.

Historically, municipalities have only accounted for those costs that fall due within the current fiscal year and are to be raised from taxation, government grants or miscellaneous revenues within that period. As a result, most municipalities operate on a pay-as-you-go basis and report as an expenditure only those amounts that are paid to a terminating employee in that year.

There is, however, a requirement set out in the Municipal Financial Reporting Handbook that all municipalities who operate a sick leave credit plan under the provisions of the Municipal Act are to disclose by way of a note to their financial statements that:

(a) a sick leave plan exists;

(b) the total dollar value of the vested liability; and

(c) the amount of such liability that has been provided for by way of a reserve or reserve fund.

While such a note does nothing to recognize the vested unfunded amount in the accounts of the municipality it does provide the users of the financial statements with enough information to assess the impact of the liability on the future financial viability of the municipality under review

**Options for the Future**

In view of these funding concerns facing the municipal sector, it is appropriate to set out some of the options available to eliminate or bring under control the growing liability of sick leave credit plans, at present in operation in the municipal sector.

First of all there are no easy answers. The very sizable liability for unfunded sick leave is the result of many years of failure to recognize the impact of such a program on future municipal revenues. As a result corrective action may be required to be spread over an extended number of years. Two main options are presented here: the municipality can change its plan, or it can opt to change to partial funding, in place of the present pay-as-you-go system.

**OPTION 1 - Change Plans**

Over the past few years an increasing number of municipalities have changed over from a sick leave plan established under the Municipal Act to some other form of short term and long term disability protection. This changeover is not as simple as just revoking the existing by-law and entering into an agreement with a private insurance carrier or establishing an in-house funding procedure. While a municipality has the right to repeal any by-law it is unlikely that the liability for the vested sick leave credits which have accumulated can be legally revoked. The changeover is further complicated when the sick leave benefit plan forms part of a union agreement that has resulted from negotiations bargained in good faith over a number of years.

This is not to imply that a change in a sick leave plan is impossible, and a number of municipalities have successfully negotiated such a change. The key word here is **"negotiated."** In reviewing the histories of those municipalities that have introduced significant changes in their sick leave plans it is clear that all of the amendments have been achieved through the ability of the municipality to prepare a program of sick leave coverage that will benefit their employees in the future while protecting

or compensating them for the benefits that had vested under the original sick leave credit plan.

While there are a number of variations in these alternative sick leave credit plans, they all contain most, if not all, of the following components:

(i) **A fixed number of allowable paid sick days in each calendar year**

The most common number of allowable days appears to be 6. This provision allows each employee to be absent for the specified number of days throughout the year without a loss of salary or wages. Any unused days standing to the credit of the employee are automatically lost at December 31 each year. This type of provision also discourages much of the abuse (e.g., using all of the days available as additional holidays) found in those types of plans that provide 12 to 18 days of sick leave per year. The non-accumulative factor eliminates the possibility of any future liability to the municipality

(ii) **A short-term disability provision**

This provides for the continuation of at least a percentage of the salaries or wages to all employees, regardless of service, over a specified period of time. The percentage paid can be as high as 100 per cent of net income and is seldom less than 66.6 per cent. This provision does not normally come into effect until a prescribed number of days of continuous absence has elapsed and in most cases requires a medical certificate attesting to the cause of the absence. The period under which payments continue also varies but generally is in a range of 13 to 26 weeks.

(iii) **A long-term disability provision**

This type of provision is designed to provide income protection to those employees who are sick or disabled for long periods of time or are permanently disabled. The percentage of wages or salaries paid under such a plan varies but is normally found to be less than 100% per cent of the net income that would be earned in any one year. There is also a prescribed waiting period before such a plan goes into effect which can range from 60 to 90 days. This waiting period is generally covered under the provisions of the short-term protection referred to above. All plans require medical certification of the illness or disability prior to benefits being available to the employees. In those cases where the disability is permanent and early retirement results, additional payments become available to the employee under the provisions of the Canada Pension Plan.

Municipalities that establish a sick leave plan that provides for all or part of the coverage described above must also determine how such a plan is to be administered and what, if any, cost-sharing provisions are to be included.

Some municipalities have established plans that are administered internally and paid for through a reserve fund which is financed by revenues raised by municipal taxes. Other municipalities have entered into a contract usually on a one-year renewable term basis with an independent insurance company who, for a monthly premium, administers and funds the program. In these instances the municipality can either absorb the premium cost in full or set out some form of cost sharing with

its employees. In deciding whether or not to share premium costs with their employees, the provisions of the Income Tax Act should be considered and the plan designed to give the maximum advantage to the employees.

**OPTION 2 - Partial Funding**

While the first option was directed at eliminating the current sick leave credit plan in favour of a new program, this option provides a way for municipalities to continue their existing plan but provide for its funding in a different manner. This way a municipality would discontinue its policy of pay-as-you-go and replace it with a policy of partial funding.

Partial funding usually requires an actuarial projection of the future payments that will be required under the terms and conditions set out in the municipality's sick leave plan. Based on this projection the municipality will be in a position to forecast the amount of future payments and the year in which they will be required to be met. It will identify any "bulge" in the payments required in future years for which provision should be made.

All contributions and expenditures would be done through a reserve fund. The contributions to this fund should be sufficient to:

(a) ensure the payment of any liability coming due within the current fiscal year; and

(b) allow for an accumulation within the fund to meet any abnormally high liabilities that will be required in the future.

Because this option appears to offer a viable alternative to municipalities, the Municipal Management Policy Branch engaged the services of William Mercer Limited to undertake a study of the effect of the pay-as-you-go policy versus the use of the partial funding method. This study was based on the sick leave plans and payroll data of three Ontario municipalities. The results of this study are set out as Appendix A.

The main conclusions of the study are that the pay-as-you-go method of financing sick leave gratuity benefits had a number of problems such as:

(1) the annual costs are not recorded in the accounts for the period in which they are incurred;
(2) substantial fluctuations in the municipality's cash flow can occur;
(3) future generations of taxpayers can be adversely affected;
(4) budgetting is difficult due to unexpected terminations;
(5) the true costs of these plans are not fully disclosed with the result that it is difficult to compare and assess alternative plans;
(6) the municipality is required to meet future costs even if the plan is discontinued.

The study further demonstrates that partial funding methods can provide a more stable method of funding provided that:

(1) sufficient contributions are made systematically to a reserve fund to provide all expected service gratuity benefits from that fund; and
(2) the level of funding is sufficient to absorb unexpected benefit payments; and
(3) the funding basis is reviewed at least every three years, to reflect changing economic and demographic conditions.

A reserve fund covering two years or more of expected benefit payments should be sufficient for medium-size municipalities to absorb most unexpected fluctuations in benefit payments. However, smaller municipalities can expect wider random fluctuations and should therefore keep proportionately larger reserve funds to provide effective protection against possible fund depletion.

## Conclusion

The purpose of any sick leave credit plan is to protect the employee from financial hardship caused by non-occupational illness or injury. This paper has attempted to point out the scope of such plans, their advantages and disadvantages and has touched on the alternatives of either moving to a plan of short-term and long term disability protection or of instituting a policy of partial funding through a reserve fund. Both options will go some way to reducing the upward trend of the vested liability associated with a standard sick leave credit plan. The decision as to which type of plan or financial arrangement is best should be made by the municipality on the basis of local circumstances. It is hoped that this paper will prompt municipalities to review their present sick leave provisions to ensure that the goal of income protection is being met while at the same time protecting the financial integrity of the municipality by providing appropriate funding for any future liabilities.

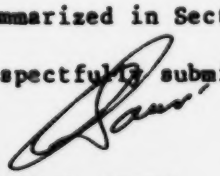
The Ministry of Municipal Affairs & Housing
3rd floor, Mowat Block
Queen's Park
Toronto, Ontario. M7A 1C2

Attention: Mr. A. Trafford
Director, Municipal Budgets & Accounts Branch

We are pleased to submit this extract of our study on the funding of service gratuity benefits payable under sick leave credit plans. The purpose of our study was to (1) identify the problems of the Pay-As-You-Go method of financing service gratuity benefits, and (2) assess the effectiveness of partial funding methods in solving these problems. Our full report was presented to the Ministry in May of 1982. This extract has been prepared to present our general findings and conclusions in a concise document preserving the confidentiality of the information provided by three selected municipalities.

We have projected over a twenty year period the service gratuity benefits that will become payable at three selected municipalities. We have also projected over the same period of time the annual contributions and the fund accumulation that the partial funding method described in Section 4 would produce. For that purpose we have made the actuarial assumptions outlined in Section 4 and assumed that no prior fund existed. For the sake of conciseness the graph and computer printouts for only one municipality are appended to this report. Our main conclusions are summarized in Section 1.

Respectfully submitted,



André M. Sauvé
Fellow of the Society of Actuaries
Fellow of the Canadian Institute of Actuaries

# STUDY
# ON THE FUNDING OF
# SERVICE GRATUITY BENEFITS
# UNDER
# SICK LEAVE CREDITS PLANS

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Extract of a
Report
presented to the
Ministry of Municipal Affairs and Housing of Ontario

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August, 1982

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Director, Municipal Budgets & Accounts Branch

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We have projected over a twenty year period the service gratuity benefits that will become payable at three selected municipalities. We have also projected over the same period of time the annual contributions and the fund accumulation that the partial funding method described in Section 4 would produce. For that purpose we have made the actuarial assumptions outlined in Section 4 and assumed that no prior fund existed. For the sake of conciseness the graph and computer printouts for only one municipality are appended to this report. Our main conclusions are summarized in Section 1.

Respectfully submitted,

André M. Sauvé
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## SECTION 1 - SUMMARY OF CONCLUSIONS

We have identified the following problems with the Pay-As-You-go method of financing service gratuity benefits, namely:

(1) annual costs are not consistent with the concept of accrual accounting;

(2) cash flows are subject to substantial annual fluctuations;

(3) it produces inequities among generations of taxpayers;

(4) advance budgeting is difficult;

(5) true costs are not disclosed and are not available to permit municipalities to compare and assess alternative salary protection plans;

(6) annual costs to the municipality continue even if future accruals of service gratuities are suspended and the plan is terminated.

Our study demonstrates that partial funding methods can effectively be used to stabilize the financial experience pertaining to service gratuity benefits provided that:

(1) sufficient contributions are made periodically and systematically to a reserve fund to provide from the reserve fund all expected service gratuity benefits; and

(2) the level of funding is reasonable and sufficient to absorb unexpected benefit payments due to deviations from the expected experience; and

(3) the funding basis is reviewed periodically, at least every three years, to reflect changing economic and demographic conditions.

A reserve fund covering two years or more of expected benefit payments should be sufficient for medium-size municipalities to absorb most unexpected fluctuations in benefit payments. However, smaller municipalities can expect wider random fluctuations in their benefit payments and should therefore keep proportionately larger reserve funds to provide effective protection against possible fund depletion.

## Limitations of Partial Funding Methods

Partial funding methods by definition do not produce annual costs consistent with the concept of accrual accounting, and therefore do not eliminate the long term intergenerational transfers nor provide the true cost assessment which is necessary in the examination of alternative salary protection plans. Furthermore, in the event of Plan termination annual costs to the municipality continue to be incurred until all accrued benefits are funded.

Full funding is the only complete solution to the financial problems of sick leave credit plans. However, it may not be acceptable when municipalities are borrowing money on the financial market at higher rates of interest than that earned by reserve funds. Under these conditions partial funding is a compromise solution that effectively stabilizes the financial experience pertaining to service gratuity benefits and reduces the level of distortion in the allocation of costs over short to medium periods of time.

## SECTION 2 - DESCRIPTION OF BENEFITS

Under a typical sick leave credit plan each employee is entitled to a certain number of days per year during which he will be paid at his regular rate of salary if he is prevented from working due to health conditions. If the employee does not fully use his yearly allowance of sick leave days, his balance of unused days is left to accumulate for his future use. Should the employee have a balance of unused sick leave days at the time of his death, termination or retirement, he or his beneficiary will be entitled to receive a service gratuity benefit, provided the employee's benefit is vested.

At each of the three selected municipalities, the amount of service gratuity benefits is taken as 50% of the employee's balance of unused sick leave credits multiplied by his daily rate of pay. The amount of gratuity benefits is subject to a maximum of 6 months of salary based on the employee's rate of pay at the time of termination, retirement or death. This corresponds to the maximum sick leave credit gratuities set by the Municipai Act of Ontario.

The following is a brief summary of the sick leave provisions covering employees of the selected municipalities:

| | MUNICIPALITY A | | MUNICIPALITY B | MUNICIPALITY C |
|---|---|---|---|---|
| | Fire Dept. | Other Employees | All Employees | All Employees |
| Annaul Sick Leave Credits (days) | 26 | 22 | 18 | 18 |
| Accumulation of Credits | 75% of unused days up to 18 days | 90% of unused days up to 18 days | 100% of unused days | 100% of unused days |
| Vesting of Credits upon - | | | | |
| Death | 7 years | Immediate | Immediate | Immediate |
| Termination | 7 years | 4 years | Immediate | 3 years |

The vesting of sick leave credits changes the nature of the sick leave credit plans from need oriented programs of salary protection to programs of paid leave entitlements. It is generally recognized that sick leave credit plans do not efficiently serve the needs of employees because of the:

1. inadequate salary protection in the event of medium to long term sickness or disability, (unless complementary programs of short term and long term disability are provided); and the

2. redundancy of the service gratuity benefits as a retirement income protection. Any inadequacy of post-retirement income would be best solved through pension plans.

## SECTION 3 - PROBLEMS OF THE PAY-AS-YOU-GO METHOD OF FINANCING SERVICE GRATUITY BENEFITS

The emerging concerns over the financial integrity of sick leave plans originate from the uncertainties as to the magnitude and incidence of their costs. There are three dimensions to the financial management of service gratuity benefits, namely the accounting, funding and disclosure of the costs and liability associated with such benefits.

Proper accounting would require that the costs of service gratuities like any other expenses be charged against income on an accrual basis. There are two components to the annual costs, namely the benefit payments in the year under consideration and the increase in liability. The annual pay-as-you-go cost corresponds to the first component and does not recognize the increase in liability. It results in inequities to the future generations of taxpayers who will pay for benefits earned but not paid in that year.

There are several different actuarial methods available which can be used for accounting purposes to allocate the costs of service gratuity benefits over the employees' working lifetime. Technically, allocating costs in excess of benefit payments (or in excess of contributions to a reserve fund, if any) produces a balance sheet reserve or a notional fund. The allocation of costs and the creation of a notional fund may be effective in disclosing the true costs of service gratuity benefits. However, it does not eliminate intergenerational transfers unless the allocated costs are actually paid into a reserve fund from which benefit payments will subsequently be made.

The following problems can be associated with the pay-as-you-go method of financing service gratuity benefits:

(1) annual costs are not consistent with the concept of accrual accounting;

(2) cash flows are subject to substantial annual fluctuations;

(3) it produces inequities among generations of taxpayers;

(4) advance budgeting is difficult;

(5) true costs are not disclosed and are not available to permit municipalities to compare and assess alternative salary protection plans;

(6) annual costs to the municipality continue even if future accruals of service gratuities are suspended and the plan is terminated.

## SECTION 4 - ACTUARIAL ASSUMPTIONS AND METHODS

A brief summary of the actuarial assumptions and methods used in our cash flow and liability projections is given below. A complete description of these actuarial assumptions and methods is provided in our full report presented to the Ministry.

### Mortality

It has been assumed that the employees of each municipality will experience mortality according to the 1977 Canadian Life Mortality Table.

### Retirement Age

It has been assumed that members of the police and fire departments will retire at age 60 and that all other employees will retire at age 65.

### Employee Termination

In consideration for the expected low rates of employee turnover in each of the three selected municipalities, a table of light termination rates has been used. For policemen the termination rates were increased in their first four years of employment to reflect their expected higher turnover in three years.

### Salary Assumption

It has been assumed that salaries will be increased by 9% on January 1 of each year for all employees. In addition a scale of merit and promotional salary increases was used for each employee in his first ten (10) years of employment.

### Interest Assumption

An interest rate of 10% compounded annually has been used.

**Growth and Depletion Rates**

It has been assumed that the number of employees at each of the three selected municipalities will either grow, remain constant or decline as indicated by the municipalities' own projections.

**Accumulation of Sick Leave Days**

It has been assumed that employees will accumulate sick leave days at an average rate corresponding approximately to those experience during the past years in each municipality.

**Funding Method**

For each municipality the amount of annual contributions to the reserve fund was taken as the level amount of contribution that would be required over the next following ten years to exactly provide, together with the accumulated fund to date, the service gratuity benefits expected to become payable over the same ten year period. The amount of annual contributions was recalculated every year based on the accumulated fund and the expected experience of the next ten years.

**Valuation Methods**

We have estimated the actuarial liability of each municipality at the end of each year in respect of service gratuities based on the following two methods:

1. Gross Liability

   By "gross liability" we mean the amount which would have to be paid if all employees were terminated on the date of the valuation. This amount is simply based on years of service, days of reserve, and annual salaries as at the valuation date. This method has certain limitations in that it reflects only the vested liabilities and makes no provision for the incidence of the costs over future years.

2. Actuarial Liability

By "actuarial liability" we mean the present value of the service gratuity benefits under the sick leave plan based on the employees' service and days of reserve as at the valuation date and the employees' salaries projected to the date on which the service gratuity benefits will become payable. The value of these obligations corresponds to the size of the fund which would have to be held so that the fund plus interest would be just sufficient to provide the servie gratuities earned to the date of valuation, using salaries at the date of death or retirement.

## SECTION 5 - CASH FLOW AND LIABILITY PROJECTIONS

The level of the pay-as-you-go costs of each municipality depends on the maturity of its workforce and its future growth prospect. Municipality A is an older municipality and its workforce is expected to decline slightly over the next few years and remain constant thereafter. Municipality B is younger and is expected to remain stable over the 20 year period under study. Municipality C is a smaller municipality that is growing rapidly. Appendix B shows the movement in the projected workforce of municipality "B" over the period January 1, 1982 to December 31, 2001.

Our cash flow projections have shown that expected benefit payments fluctuate significantly from one year to the next both in dollar amount and as a proportion of payroll. The following table shows the variability of the pay-as-you-go costs expressed as a percentage of payroll and the impact on costs of the level of maturity and of the expected level of growth of each municipality.

| | Projected Annual Pay-As-You-Go Costs As a Percentage of Payroll Over the Years 1982 to 2001 Inclusive | | |
|---|---|---|---|
| Municipality | Minimum | Maximum | Average |
| A | .98% | 2.79% | 1.89% |
| B | .79% | 2.13% | 1.37% |
| C | .42% | 2.23% | 1.17% |

The graph presented in Appendix A illustrates for municipality "B" the annual fluctuations in the pay-as-you-go costs compared with the smooth progression of the annual contributions under the funding method described in Section 4. Other funding methods can be devised to produce annual contributions that will remain approximately constant as a dollar amount or alternatively as a percentage of payroll.

The projected pay-as-you-go costs for municipality "B" are shown in Appendix C, while the projected contributions and fund accumulation are shown in Appendix D. Appendix E shows the progression of the service gratuity liability and of the corresponding funded ration for the same

municipality. The following table shows the projected average annual rate of increase in actuarial liability for each of the selected municipalities over the period January 1, 1981 to January 1, 2002.

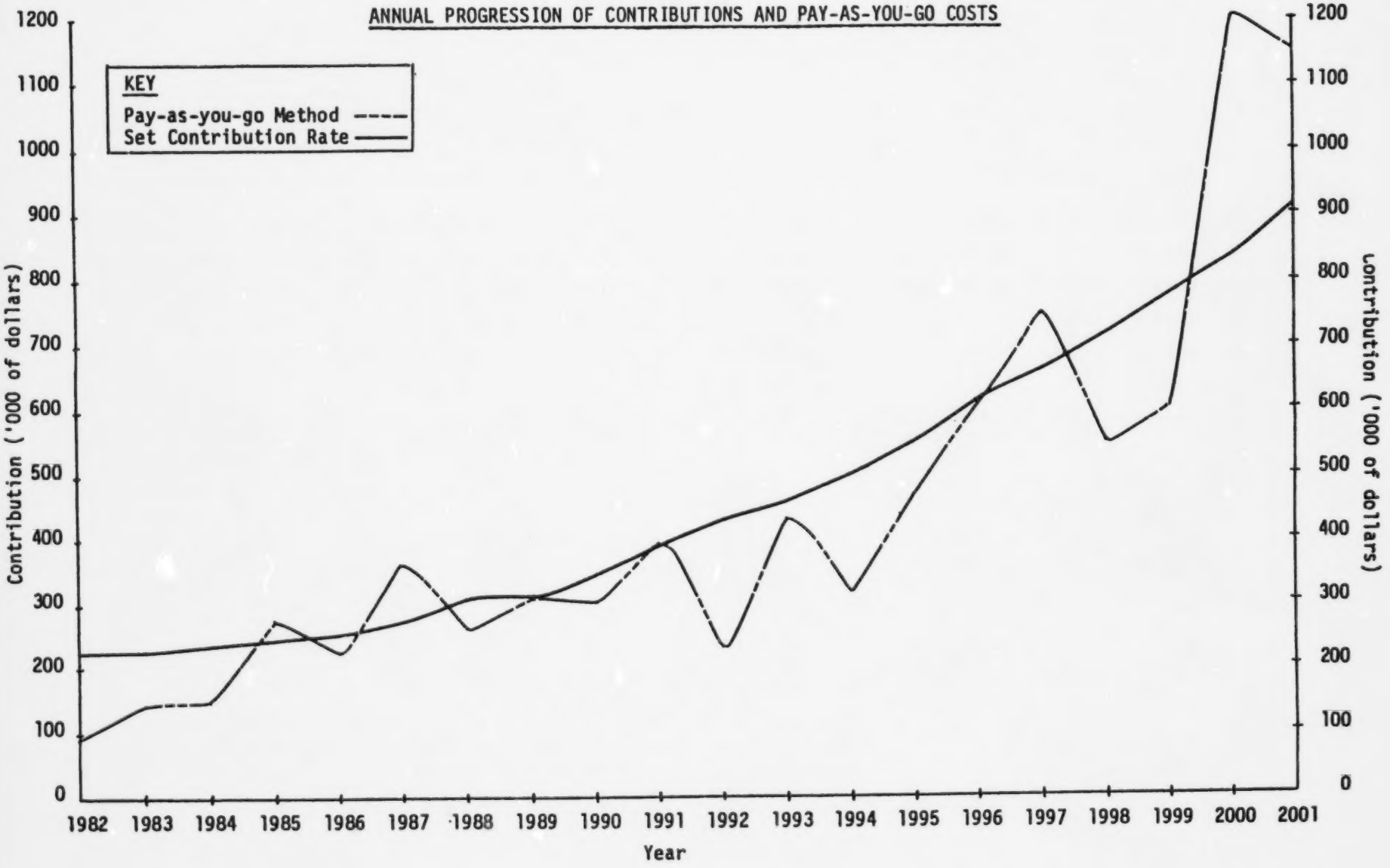
| Municipality | Estimated Actuarial Liability As At January 1, 1981 | Estimated Actuarial Liability As At January 1, 2002 | Average Annual Rate of Increase |
|---|---|---|---|
| A | $2,962,966 | $16,367,020 | 8.9% |
| B | 2,494,755 | 19,926,632 | 10.9% |
| C | 365,789 | 6,160,170 | 15.2% |

The projected funded ratio for each of the three selected municipalities increases rapidly over the first few years to reach a level of 10% after 5 years, and then stabilizes at levels well below the 20% mark.

APPENDIX A

MUNICIPALITY B

ANNUAL PROGRESSION OF CONTRIBUTIONS AND PAY-AS-YOU-GO COSTS



# APPENDIX B

MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING
Municipality B

MEMBERSHIP MOVEMENT

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|---|---|---|---|
| ACTIVES AT JAN. 1 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 |
| DEATHS | 2.49 | 2.59 | 2.58 | 2.62 | 2.53 | 2.49 | 2.42 | 2.43 | 2.46 | 2.52 |
| TERMINATIONS | 7.75 | 7.88 | 7.90 | 7.95 | 8.10 | 7.97 | 7.79 | 7.52 | 7.31 | 7.04 |
| RETIREMENTS | 2.90 | 8.53 | 6.50 | 13.76 | 9.83 | 11.53 | 7.87 | 7.76 | 6.82 | 8.31 |
| NEW ENTRANTS | 13.14 | 19.00 | 16.98 | 24.33 | 20.46 | 21.99 | 18.08 | 17.71 | 16.59 | 17.67 |
| ACTIVES AT DEC. 31 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 |

| YEAR | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| ACTIVES AT JAN. 1 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 |
| DEATHS | 2.53 | 2.64 | 2.60 | 2.75 | 2.80 | 2.79 | 2.80 | 2.93 | 3.05 | 3.00 |
| TERMINATIONS | 6.85 | 6.44 | 6.31 | 6.07 | 5.27 | 6.11 | 6.06 | 5.92 | 5.67 | 5.87 |
| RETIREMENTS | 3.24 | 9.60 | 3.25 | 7.07 | 10.14 | 9.97 | 5.38 | 5.28 | 14.10 | 10.96 |
| NEW ENTRANTS | 12.62 | 18.68 | 12.16 | 15.89 | 18.91 | 18.87 | 14.24 | 14.13 | 22.82 | 19.83 |
| ACTIVES AT DEC. 31 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 | 504.00 |

AVERAGE RATE OF EMPLOYEE TURNOVER
FROM TERMINATION ONLY: 1.37 PERCENT
FROM ALL CAUSES: 3.51 PERCENT

# APPENDIX C

MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING

Municipality B

ANNUAL COSTS
UNDER
A
PAY-AS-YOU-GO METHOD OF FINANCING

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|---|---|---|---|
| PAYROLL | 11755477. | 12889911. | 14119666. | 15453521. | 16838631. | 18406198. | 20055068. | 21930538. | 23848860. | 26038337. |
| PAYMENTS ON DEATH | 20242. | 23676. | 26835. | 30628. | 32809. | 36296. | 39084. | 43760. | 48443. | 54692. |
| ON TERMINATION | 33403. | 37160. | 41238. | 46252. | 50991. | 55860. | 60781. | 65868. | 71199. | 76957. |
| ON RETIREMENT | 38782. | 84171. | 80538. | 201328. | 140129. | 222231. | 165946. | 203426. | 184099. | 261542. |
| TOTAL | 92427. | 145007. | 148611. | 278208. | 223929. | 314387. | 265811. | 313054. | 303741. | 393191. |
| % OF PAYROLL | 0.79 | 1.12 | 1.05 | 1.80 | 1.33 | 1.71 | 1.33 | 1.43 | 1.27 | 1.51 |

| YEAR | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| PAYROLL | 28377696. | 31046491. | 33899290. | 36954365. | 40247729. | 43878638. | 47718187. | 52031818. | 56748519. | 61871163. |
| PAYMENTS ON DEATH | 59690. | 69817. | 78665. | 89570. | 100895. | 111836. | 121671. | 139922. | 160626. | 171776. |
| ON TERMINATION | 83210. | 89657. | 96703. | 103955. | 112222. | 120636. | 129981. | 139577. | 149669. | 160763. |
| ON RETIREMENT | 89212. | 275915. | 148713. | 276522. | 399245. | 514675. | 303927. | 327369. | 899133. | 822866. |
| TOTAL | 232120. | 435389. | 322081. | 470047. | 612362. | 747147. | 555579. | 606868. | 1209428. | 1155405. |
| % OF PAYROLL | 0.82 | 1.40 | 0.95 | 1.27 | 1.52 | 1.70 | 1.16 | 1.17 | 2.13 | 1.87 |

AVERAGE RATE OF ANNUAL PAYMENTS
AS A PERCENTAGE OF SALARY: 1.37

# APPENDIX D

MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING

## Municipality B

PROGRESSION OF FUND AND CONTRIBUTIONS

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|---|---|---|---|
| FUND AT JAN. 1 | 0. | 141455. | 244233. | 366461. | 375752. | 453265. | 470032. | 575103. | 647398. | 765477. |
| CONTRIBUTIONS | 225300. | 225411. | 237922. | 242569. | 255291. | 276604. | 313211. | 317448. | 345773. | 385608. |
| INTEREST | 8582. | 22374. | 32916. | 44931. | 46151. | 54550. | 57671. | 67901. | 76047. | 89246. |
| TOTAL PAYOUTS | 92427. | 145007. | 148611. | 278208. | 223929. | 314387. | 265811. | 313054. | 303741. | 393191. |
| FUND AT DEC. 31 | 141455. | 244233. | 366461. | 375752. | 453265. | 470032. | 575103. | 647398. | 765477. | 847140. |
| CONTRIBUTIONS % OF PAYROLL | 1.92 | 1.75 | 1.69 | 1.57 | 1.52 | 1.50 | 1.56 | 1.45 | 1.45 | 1.48 |
| PAYROLL | 11755477. | 12869911. | 14119666. | 15453521. | 16838631. | 18406190. | 20055068. | 21930538. | 23848860. | 26038337. |

| YEAR | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| FUND AT JAN. 1 | 847140. | 1146062. | 1305643. | 1639045. | 1901801. | 2124565. | 2275368. | 2700851. | 3168003. | 3142892. |
| CONTRIBUTIONS | 431879. | 465083. | 500177. | 551023. | 624382. | 663921. | 729626. | 778961. | 840980. | 913127. |
| INTEREST | 99163. | 129867. | 147305. | 181780. | 210744. | 234029. | 251436. | 295059. | 343337. | 343320. |
| TOTAL PAYOUTS | 232120. | 435389. | 322081. | 470047. | 612362. | 747147. | 555579. | 606868. | 1209428. | 1155405. |
| FUND AT DEC. 31 | 1146062. | 1305643. | 1639045. | 1901801. | 2124565. | 2275368. | 2700851. | 3168003. | 3142892. | 3243933. |
| CONTRIBUTIONS % OF PAYROLL | 1.52 | 1.50 | 1.50 | 1.49 | 1.55 | 1.51 | 1.53 | 1.50 | 1.48 | 1.48 |
| PAYROLL | 28377696. | 31046491. | 33899290. | 36954385. | 40247729. | 43878630. | 47718187. | 52031818. | 56748519. | 61871163. |

# APPENDIX E

MINISTRY OF MUNICIPAL AFFAIRS AND HOUSING

## Municipality B

PROGRESSION OF FUND AND ACTUARIAL LIABILITY

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|---|---|---|---|---|---|---|---|---|---|---|
| FUND AT DEC. 31 | 141455. | 244233. | 366461. | 375752. | 453265. | 470032. | 575103. | 647398. | 765477. | 847140. |
| GROSS LIABILITY AT DEC. 31 | 3240515. | 3646366. | 4110523. | 4511189. | 5029245. | 5534951. | 6166050. | 6840445. | 7621253. | 8421843. |
| ACTUARIAL VALUE AT DEC. 31 | 2848547. | 3203315. | 3610927. | 3953993. | 4408407. | 4844237. | 5397736. | 5987008. | 6675119. | 7376489. |
| FUNDED RATIO (%) | 4.97 | 7.62 | 10.15 | 9.50 | 10.28 | 9.70 | 10.65 | 10.81 | 11.47 | 11.48 |

| YEAR | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|---|---|---|
| FUND AT DEC. 31 | 1146062. | 1305643. | 1639045. | 1901801. | 2124565. | 2275368. | 2700851. | 3168003. | 3142892. | 3243933. |
| GROSS LIABILITY AT DEC. 31 | 9499974. | 10509229. | 11770899. | 13042966. | 14330032. | 15650010. | 17328215. | 19159593. | 20623249. | 22349709. |
| ACTUARIAL VALUE AT DEC. 31 | 8345077. | 9239907. | 10378138. | 11523453. | 12678871. | 13860346. | 15389298. | 17065603. | 18372010. | 19926632. |
| FUNDED RATIO (%) | 13.73 | 14.13 | 15.79 | 16.50 | 16.76 | 16.42 | 17.55 | 18.56 | 17.11 | 16.28 |

For more information, write or call any of the field offices of the Municipal Operations Division. They are located at these addresses.

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